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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/588,163

08/01/2006

Atsushi Yamaguchi

128939

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11/14/2008

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P.O. BOX 320850

ALEXANDRIA, VA 22320-4850

EXAMINER

KIM, PETER B

ART UNIT

PAPER NUMBER

2851

MAIL DATE

DELIVERY MODE

11/14/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/588,163 | Applicant(s) YAMAGUCHI, ATSUSHI | |
| | Examiner Peter B. Kim | Art Unit 2851 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-49 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-49 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>10/27/2006, 10/13/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

In response to applicant's arguments filed on July 24, 2008 and after a review of the claims, the restriction requirement is withdrawn and claims 1-49 are examined.

Specification

The disclosure is objected to because of the following informalities: The letter "L" of pages 57, 59, 61, and 62 are not clearly defined.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-29, 34-47 and 49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanimoto et al. (Tanimoto) (5,151,749) in view of Streefkerk et al. (Streefkerk) (2006/0007419).

Tanimoto discloses an exposure apparatus (Fig. 1) which exposes a substrate (W) by radiating an exposure light beam, an exposure method and a position control method and a method for producing a device comprising a mover (ST) which holds the substrate (W), a driving unit (30X and 30Y) which moves the mover and an interferometer (XI, YI) system which radiates a measuring light beam onto a reflecting surface (MX, MY) formed on the mover and which receives a reflected light beam therefrom to measure position information about a position

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of the mover; and a memory (col. 9, lines 1-10) which stores error information about an error of the reflecting surface (col. 7, line 61 - col. 9, line 45). Tanimoto discloses a control unit (50) which controls the driving unit and which includes control information for moving the mover in the absence of the liquid wherein the control unit controls the driving unit (col. 7, lines 15-57) and projecting the patterned image (R) onto the substrate on the basis of the error information (Fig. 1). Tanimoto discloses correction information to control movement of the mover by compensating the error of the reflecting surface (col. 8, lines 58-65), and discloses controlling the position on the error information and the position measured by the interferometer system when a plurality of marks on the substrate are detected (col. 4, lines 29-63). Tanimoto discloses the error of the reflecting surface including warpage (curving) and inclination (col. 7, lines 61-67), and the reflecting surface formed in a first direction and the information includes a plurality of pieces of information corresponding to a plurality of positions in a second direction perpendicular to the first direction (col. 7, line 61 - col. 9, line 45, Fig. 5), wherein the mover has a second reflection surface which extends in the second direction (MX, MY) and the error information includes a plurality of pieces of information corresponding to a plurality of positions in the first direction, as the error information about the error of the second reflecting surface (col. 7, line 61 - col. 9, line 45). However, Tanimoto does not disclose the exposing the substrate through a liquid, determining the error information of the reflecting surface in the presence of the liquid and the controlling the driving unit and including control information for moving the mover in the presence of the liquid supplied onto the mover. Streefkerk discloses in an immersion lithographic system (Fig. 2 and 5) which improves the resolution over the exposure apparatus which does not use the immersion liquid and in para 0048 that liquid that might

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migrate over the sides of the substrate table onto the mirrors for the interferometer system may cause errors or interfere with the operation. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to obtain the error information under dry condition and the condition when the immersion liquid is supplied when using an immersion liquid exposure system to improve the resolution since as taught by Streefkerk the liquid might migrate over the sides to the reflecting surfaces.

Claims 30-33 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanimoto et al. (Tanimoto) (5,151,749) in view of Streefkerk et al. (Streefkerk) (2006/0007419) and Loopstra et al. (Loopstra) (5,969,441).

Tanimoto in view of Streefkerk discloses the claimed invention as discussed above; however, the modified Tanimoto does not disclose an exposure station and a measuring station. Loopstra discloses an exposure station and a measuring station (Fig. 1). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to further modify Tanimoto by providing the separate exposure and measuring station and obtaining the control information for moving the mover in the presence of the liquid at the exposure station and the information for moving the mover in the absence of the liquid at the measuring station in order to improve the throughput since the measurement of one substrate and mover can take place while another is being exposed.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter B. Kim whose telephone number is (571) 272-2120. The examiner can normally be reached on 9:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571) 272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Peter B. Kim/
Primary Examiner, Art Unit 2851

November 8, 2008